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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/655,829	09/05/2003	Yiqun Lin	125.082US01	7154

7590 09/06/2005
Fogg and Associates, LLC
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EXAMINER

DOAN, NGHIA M

ART UNIT PAPER NUMBER

2825

DATE MAILED: 09/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/655,829

Applicant(s)

LIN ET AL.

Examiner

Nghia M. Doan

Art Unit

2825

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02/06/2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. Responsive to communication application 10/655,829 filed on 09/05/2003, claims 1-32 are pending.

Specification

2. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

3. The abstract of the disclosure is objected to because the abstract is less than 50 words and merely recites claim 1. Correction is required. See MPEP § 608.01(b).

Claim Objections

4. Claims 1-32 are objected to because of the following informalities: either one of terms "empty area" or "empty space" should be consistent in these claims.

Claim 7, term "an" before empty area should be "the". Appropriate correction is required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1-32 are rejected under 35 U.S.C. 102(e) as being anticipated by Smith et al. (Smith) (US 2003/0229875).

7. With respect to claims 1, 11, and 22, Smith discloses a computer system and method (abstract) of simulating a layout of an integrated circuit, comprising:

automatically identifying (determining) empty areas in a layout that can be filled (pg. 3, ¶ 26, col.1, ll. 7-9; col. 2, ll.1-4; and ll. 18-19).

generating fill patterns to fill the empty areas (pg. 3, ¶ 26, col. 1, ll. 12-25 and col. 2, ll.1-4; and ll. 18-19).

8. With respect to claims 2 and 23, Smith discloses the method of claims 1 and 22, respectively further comprising: automatically filling the empty spaces with the fill patterns (pg. 3, ¶ 26, col. 2, ll.1-4; and ll. 18-19).

9. With respect to claims 3, 18, and 24, Smith discloses the method of claims 1, 11, and 22, respectively further comprising:

selecting the fill patterns (pg. 3, ¶ 26, col.1, ll. 22-25 and col. 2, ll.27-30 – generating pattern model, which is selected dependence empty areas in layout extraction, and pg. 7, ¶ 114, ll. 4-9);

placing the pattern in empty areas to fill the empty areas (pg. 3, ¶ 26, col. 2, ll.1-4; and ll. 18-19).

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10. **With respect to claims 4 and 14**, Smith discloses the method of claims 1 and 11, respectively further comprising: filling select empty areas with the fill patterns (pg. 3, ¶ 26, col. 2, ll.1-4; and ll. 18-19; pg. 7, ¶ 114, ll. 4-9).

11. **With respect to claims 5 and 25**, Smith discloses the method of claims 1 and 22, respectively further comprising: defining a unique layout cell for each fill pattern that is placed in a designated library (pg. 7, ¶ 114, ll. 13-28).

12. **With respect to claims 6 and 26**, Smith discloses the method of claims 1 and 22, respectively further comprising: using a configuration file to define the fill pattern (fig. 20B and its description; pg. 12, ¶ 187; and pg. 11, ¶ 176 – using the Canonical interconnect structure to generate (define) the fill pattern).

13. **With respect to claims 7, 15-17, 19-21, and 27**, Smith discloses all the limitations as set forth in the claims:

wherein automatically identifying empty areas in a layout that can be filled (pg. 3, ¶ 26, col.1, ll. 7-9; col. 2, ll.1-4; and ll. 18-19), further comprises:

running the empty area identification design tool that is based on design rule checking (DRC) requirements (pg. 7, ¶ 114, ll. 12-29 – generating design rule and constraint then convert them to dummy fill (empty fill) guidelines. The complete system ran until a dummy fill is determined that meets the desired process specification--).

when the design does not pass the DRC test (pg. 7, ¶ 114, ll. 1 – if the design does not meet the specified tolerance (design rule) --), modifying the design layout, the empty areas and fill pattern (pg. 7, ¶ 114, ll. 2-9 – adjusting (modifying) the layout and the size of dummy fill and fill pattern --).

14. **With respect to claims 8 and 28**, Smith discloses the method of claims 1 and 22, respectively further comprising: using a hierarchical database that is adapted to provide easy modification or move-ability of fill patterns (fig. 19 and 24, and see their description, pg. 12, ¶ 188, ll. 6-15).

15. **With respect to claims 9 and 31**, Smith discloses the method of claims 1 and 22, respectively further comprising: filling select empty areas with the fill patterns, wherein the select empty areas represent different layers of mask and metal in the integrated circuit (fig. 2A and 2B and see their description; and pg.1, ¶ 6-8)

16. **With respect to claims 10 and 32**, Smith discloses the method of claims 9 and 31, respectively further comprising: wherein at least one of the different layers is filled with different shape fill patterns than the shapes in fill patterns of the other different layers (pg. 12, ¶ 180).

17. **With respect to claims 12 and 29**, Smith discloses the method of claims 11 and 22, respectively further comprising: wherein the empty areas are represent as polygon (pg. 12, ¶ 179 – mathematically square is one type of polygon--)

18. **With respect to claims 13 and 30**, Smith discloses the method of claims 9 and 31, respectively further comprising: using a recursive partition (repeated dividing) algorithm on select empty areas to partition the select empty areas into multiple rectangles to be filled with the fill patterns (fig. 2-4 and 9, see their description; and ¶ 26 and ¶ 124).

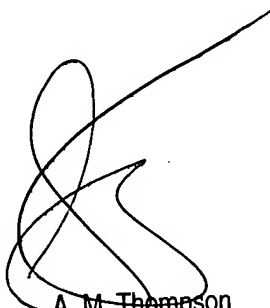
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nghia M. Doan whose telephone number is 571-272-5973. The examiner can normally be reached on 8:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Smith can be reached on 571-272-1907. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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